

Meteors were also observed during the month on the following dates:

1st, Orono, Me. 3d, Starkey, N. Y. 5th, Pekin, Ill.; Orono, Me.; Weldon, N. C. 7th, Cedar Keys, Fla.; Wauseon, Ohio. 8th, Cedar Keys, Fla.; Woodstock, Md. 9th, Fort Sully, Dak.; Trenton, Tenn. 12th, Manatee, Fla.; Harvard, Nebr. 13th, Woodstock, Md.; Kalamazoo, Thornville, and Benzonia, Mich.; Jacksonborough, Ohio; Tatoosh Island, Wash.; Mount Angel, Oregon; Riddleton, Tenn. 14th, Fort Sully, Dak.; Manatee, Fla.; Starkey, N. Y.; Delavan, Wis. 15th, Bar Harbor, Gardiner, and Eastport, Me.; North Truro, Mass. 16th, Yuma, Ariz. 17th, Taunton, Mass.; Kalamazoo, Mich.; Beverly and Egg Harbor City, N. J.; Factoryville, N. Y. 18th, Calumet and Kalamazoo, Mich.; Dover, N. J.; Wauseon, Ohio. 19th, Mauzy, Ind.; Egg Harbor City, N. J. 20th, Fort Sully, Dak.; Logansport, Ind.; Wauseon, Ohio; Rappahannock, Va.; Columbia, S. C. 21st, Manatee and Cedar Keys, Fla.; Crete, Nebr.; Yaquina Lighthouse, Oregon; Wytheville, Va.; Vashon, Wash. 22d, Rappahannock, Va. 23d, Webster, Dak.; Titusville, Fla. 25th, Butlerville, Ind. 26th, Marquette, Nebr.; Rappahannock, Va. 28th, Trenton, Tenn. 30th, Fort Sully, Dak.

#### MIGRATION OF BIRDS.

*Geese flying southward.*—Nicolaus, Cal., 9th, 12th, 17th;

Sacramento, Cal., 15th, 30th; San Diego, Cal., 19th; Fort Buford, Dak., 21st; Salina, Kans., 13th; Grand Haven, Mich., 2d, 9th; Poplar River, Mont., 25th, 28th; Crete, Nebr., 21st; Albany, Oregon, 6th, 10th, 22d; Linkville, Oregon, 11th, 16th, 28th; Wellsborough, Pa., 25th, 26th; Fort Canby, Wash., 4th, 28th; Pysht, Wash., 15th; Port Angeles, Wash., 28th.

*Geese flying northward.*—Fort Sully, Dak., 24th; Linkville, Oregon, 26th.

*Geese flying eastward.*—Little Rock, Ark., 23d.

*Ducks flying southward.*—Little Rock, Ark., 23d; Erie, Pa., 16th; Tatoosh Island, Wash., 2d.

*Brants flying southward.*—Independence, Kans., 27th.

*Cranes flying southward.*—Independence, Kans., 27th.

#### SAND STORMS.

Yuma, Ariz.: a heavy sand storm prevailed from 1.50 to 3.25 p. m. on the 19th; maximum velocity of the wind during the storm, thirty-eight miles per hour.

A sand storm is also reported to have occurred at Fresno, Cal., on the 5th.

#### SUN SPOTS.

Mr. H. D. Gowey, of North Lewisburg, Champaign Co., Ohio, reports having observed sun spots on the following dates: 3d, 4th, 14th to 21st.

### VERIFICATIONS.

In consequence of the urgency of other work the detailed comparison of the tri-daily indications for September, 1887, and the average percentages of verifications, have not been completed in time for publication in this REVIEW. The usual data in connection will, however, appear in the succeeding number, as it is not considered advisable to delay the current issue.

#### LOCAL VERIFICATIONS.

The following is from the report of the "Michigan State Weather Service" for September, 1887:

Weather and temperature signals are now displayed in one hundred and forty-three towns in the state, and on the baggage-cars of twenty-five trains on seven principal railroads of the state.

The percentage of verification of weather signals for September is as follows: (the verification is taken from reports of displaymen furnished this office monthly) temperature, 82.8 per cent.; weather, 86.5 per cent.; temperature and weather, 84.7 per cent.

The percentage of verification of weather predictions for September on the D., G. H., and M. R'y., is 84.2 for weather and 80.8 for temperature; on the C. & G. T. R'y., weather, 85.3, and temperature, 83.5; P. H. & N. R'y., weather, 88.6, and temperature, 81.5; M. C. R'y., for weather, 84.0, and for temperature, 82.8; G. R. & I. R'y., weather, 80.7, and temperature, 79.5; C. & W. M. R'y., weather, 85.0, and temperature, 83.3.

The following is from the September, 1887, report of the "Minnesota Weather Service:"

Verifications of weather signals for Minnesota were 80 per cent. for weather and 78 per cent. for temperature.

The following is from the September, 1887, report of the "North Carolina Weather Service:"

The percentage of verifications as determined from seven points in the state is as follows: weather, 80.1 per cent.; temperature, 78.2 per cent.

The following is from the September, 1887, report of the "South Carolina Weather Service:"

The percentage of verification of the weather and temperature predictions for the whole state was: for weather, 82.9 per cent.; for temperature, 80.8 per cent.

The following is from the "Tennessee State Board of Health Bulletin" for September, 1887:

The percentage of verification of weather and temperature predictions, furnished daily from the Signal Office at Washington to the various stations in the state during the month, was for the state: weather, 79.1 per cent.; and temperature, 88.2 per cent.

#### ERRATUM.

July, 1887, REVIEW, page 185, first column, make "Barbadoes, on the 20th, moving east. It then moved eastward," etc., read, "Barbadoes on the 20th, moving west. It then moved westward," etc.

### STATE WEATHER SERVICES.

The following extracts are republished from reports for September, 1887, of the directors of the various state weather services:

The "Alabama Weather Service," P. H. Mell, jr., of the Agricultural and Mechanical College, Auburn, director:

The month of September was singular, both on account of the continued drought over the first two-thirds of the period, and the high range of temperature at all stations during a greater part of the first half of the month. In north Alabama the thermometer reached as high as 104°, and before the close of the month there was a depression of more than 50°; but this cold wave did not strike the state until the last two or three days of the month. The heavy rain of the 16th and 17th that passed over the entire state, accompanied in many sections by violent electric displays, did much damage to both life and property. This storm was evidently the result of the passage of the low pressure across the northern part of the United States. In some sections of Alabama strong winds prevailed, coming from the southwest.

Crops of all kinds have suffered more or less on account of the dry, hot weather that extended over the greater part of the month. And the season

was very favorable for the multiplication of many injurious insects. The "Aletia" did great damage to the cotton plant, reducing the yield of staple, in some sections, to quite a low figure. One advantage of the warm dry season was the rapid opening of the cotton; and the farmers were able to pick it out rapidly on account of the many fair days without rain.

#### Summary.

*Temperature (degrees Fahr.).*—Monthly mean, 73° 8'; highest monthly mean, 78° 6', at Fayette; lowest monthly mean, 66° 5', at Opelika; maximum, 104°, at Fayette, on the 11th and 12th; minimum, 39°, at Evergreen, on the 26th; range for state, 65°; greatest local monthly range, 60°, at Evergreen; least local monthly range, 30°, at Union Springs; greatest daily range, 83°, at Tusculumbia on the 9th; least daily range, 0°, at Bermuda on the 19th.

*Precipitation, including melted snow (in inches).*—Average for the state, 8.51; greatest, 7.16, at Auburn; least, 1.28, at Pine Apple.

*Winds.*—Prevailing direction, southwest and southeast.